ABSTRACT

A detection-grid is disclosed that is part of a vehicle's thermal protection layer, such as that of a space shuttle. A hybrid digital/analog system detects electrical changes in the detection grid caused by mechanical trauma to a vehicle's external surface. The system produces timely and useful display of such events. Furthermore, with redundant verification of such real-time data, the vehicle can detach from other apparatus, such as an external fuel tank or booster rockets, to execute pre-planned glide or descent scenarios maximizing a crew's and vehicle's safe return before proceeding to orbit. The detection-grid ablates off during re-entry of a regular mission.